

33 × 4.8–6.6 μm, ventricose to cylindric with acute apices, occasionally mucronate or strangulate, hyaline and thin-walled, projecting up to 11 μm beyond the basidia. *Pleurocystidia* common, similar to the cheilocystidia. *Caulocystidia* from apex of stipe versiform, 21–48 × 6–12 μm, clavate, elongate, irregularly lobed or strangulate, smooth, with pale ochraceous walls up to 0.6 μm thick. Caulocystidia (stipe hairs) from base of stipe versiform, irregular in outline with obtuse apices, up to 110 μm long with brown, evenly pigmented walls up to 1.2 μm thick. *Pileus cuticle* up to 60 μm thick, composed of repent, interwoven, smooth hyphae up to 3.6 μm broad, with hyaline to ochraceous, inamyloid walls up to 0.5 μm thick, imbedded in a gelatinous matrix. *Pileus trama* composed of loosely interwoven, smooth, non-gelatinized hyphae 4.2–7.2 μm broad, with hyaline to pale yellowish, inamyloid walls up to 1.5 μm thick, with numerous interhyphal spaces. *Lamellar trama* interwoven, composed of smooth, thin-walled, hyaline, inamyloid, non-gelatinized hyphae 2.7–3.6 μm broad. *Stipe cortical layer* up to 60 μm thick, composed of parallel, thin-walled hyphae, wavy in outline, smooth or with scattered granular pigment incrustations, with hyaline to ochraceous, inamyloid walls. *Stipe trama* composed of parallel to subparallel, smooth hyphae up to 11.5 μm broad with hyaline, inamyloid walls up to 0.6 μm thick. *Clamp connections* present.

HABIT, HABITAT, AND DISTRIBUTION. Scattered to gregarious, insititious on stems and leaves of *Sequoia sempervirens*. Commonly associated with scattered mixed hardwoods. Oct.–Feb.

MATERIAL EXAMINED: U.S.A., CALIFORNIA, Mendocino Co.: D. E. Desjardin 480, 561, 1674, 1740 (HOLOTYPE: Jackson State Forest, 13 Nov. 1982), 1767, 1791, 2526, 2575, H. D. Thiers 8399, 8730, 35325 (all SFSU).

Micromphale sequoiae is characterized by the combination of a light brown to flesh-colored, rugulose pileus, concolorous subdistant lamellae, a mild odor, a latent garlic taste, and a greyish orange to brown pubescent stipe insititious on leaves of *Sequoia*. The lack of a *Rameales*-structure in the pileus cuticle and the presence of gelatinized cuticular hyphae, coupled with a pubescent stipe and poorly developed rhizomorphs are characters which place this taxon in *Micromphale* section *Perforantia* (*sensu* Singer, 1975). This new species is similar to *M. perforans* which has a pale pileus, a strongly fetid odor and a black, velutinous stipe that is insititious on leaves of *Picea* and *Abies*. *Micromphale sequoiae* differs by having a darker pileus, a mild odor and a paler and merely pubescent stipe. The type of caulocystidia at the base of the stipe provides a distinctive microscopic difference between these two taxa. In *M. perforans*, the stipe base is corticated by a dense layer of narrowly cylindric caulocystidia that have dark brown walls and apices that often contain a heavy concentration of pigment. In contrast, *M. sequoiae* has scattered, broader, and paler brown caulocystidia that lack the apical concentration of pigment. Furthermore, the substrate preference of *M. sequoiae* for leaves of *Sequoia* is an important diagnostic character. *Micromphale sequoiae* has never been collected on leaves of *Picea* or *Abies* (the typical substrate for *M. perforans*), even in habitats where the three tree genera are sympatric.

Micromphale sequoiae might be confused with *Marasmius pallidocephalus* Gilliam or *M. androsaceus* (L.:Fr.) Fr. which have been collected occasionally on *Sequoia*, but these latter species possess black, glabrous, bristle-like stipes, copious, long, black rhizomorphs and have epicuticular layers composed of diverticulate, non-gelatinized hyphae. See Gilliam (1975, 1976) for complete descriptions of *Marasmius pallidocephalus* and *M. androsaceus*.

Micromphale arbuticola Desjardin, sp. nov.

FIGS. 2, 6–7

Pileus 4–9 mm latus, e campanulato planus cum papillis centrabilis, ruguloso-sulcatus, disco glaber vel granulosus, primo atrobrunneus, in aetate disco pallido-brunneus, margine pallidior. Odor

et sapor alliacei. Lamellae adnatae, confertae vel subdistantes, angustae, griseolo-aurantiae vel brunneo-aurantiae. Stipes 5–10 mm longus, 0.75–1.25 mm crassus, teres vel apice compressus, insititius, pruinosis, apice brunneus, base ater; rhizomorphae nullae. Sporae 7.2–8.1 × 3.3–4.2 μm, ellipsoideae, laevae, inamyloideae, in cumulo albae. Cystidia hymenii nulla. Caulocystidia dispersa, 10.8–18 × 4.2–6 μm, cylindrica vel clavata; parietas laeves, brunnei, inamyloideae. Trama pilei laxe intertexta et subgelatinosa. Epicutis pilei ex hyphae confertim intertextae, subgelatinosae, inamyloideae, incrustatae composita. Pilei dense gregarii in cortice *Arbuti menziesii*. Holotypus: D. E. Desjardin 1839, Samuel P. Taylor State Park, Lagunitas, Marin Co., Calif., 27 Nov. 1982. (SFSU). Isotypus: (DAOM)

Pileus 4–9 mm broad, when young, hemispheric to campanulate, in age becoming broadly campanulate to plane with a small central papilla or shallowly depressed with central papilla; margin when young smooth, even, entire, soon becoming sulcate nearly to central papilla, in age rugulose-sulcate, wavy, rarely lobed; surface dull, dry, opaque, glabrous overall when young, becoming granular-crystalline on the disc or rarely granular overall in age; dark brown (7F4-8) overall when young, margin soon fading to light brown (7D4-5), in age central papilla dark brown or color often obscured by a coating of greyish cream or whitish granules, area surrounding papilla colored light brown (6D4-5), margin in age brownish orange (6C3-5) to greyish orange (6B2-3). Context light brown, soft, up to 1 mm thick. *Odor* mild to fetid, strongly alliaceous when crushed. *Taste* alliaceous. *Lamellae* adnate to short decurrent, close to subdistant, narrow, rarely forked and intervenose; buff when young, in age becoming pale greyish orange (6B2) to pale brownish orange (7B2), lamellae of older specimens greyish brown (8E3-4) when dried; edges even, entire, concolorous. Lamellulae in 1–2 series. *Stipe* 5–10 mm long, 0.75–1.25 mm broad, terete or rarely apically compressed, evenly tapered downward to a small, often subbulbous, insititious base; tough, pliant, cartilaginous but not bristle-like, dull, dry, solid; context concolorous with stipe surface; glabrous to minutely pruinose overall (with a 10× hand lens); apex brown (7E5-8), base dark brown (7F4-8) to black. *Rhizomorphs* and sterile stipes absent. *Basidiocarps* pliant, marcescent to putrescent.

Spores (6.9–)7.2–8.1(–9) × 3.3–4.2 μm, ellipsoid, hyaline, smooth, inamyloid, white in deposit. *Basidia* 27–30 × 6.6–7.8 μm, broadly clavate to sphaeropedunculate, hyaline, four-spored, with sterigmata up to 4.8 μm long. *Hymenial cystidia* absent. *Caulocystidia* scattered, 10.8–18 × 4.2–6 μm, cylindric, irregularly cylindric, clavate to ventricose, with obtuse apices and ochraceous to brown, inamyloid, smooth walls 0.5–0.8 μm thick. *Pileus cuticle* 37–75 μm thick, composed of compactly interwoven, repent, weakly gelatinized or non-gelatinized hyphae 3.6–6 μm broad with hyaline, yellowish or pale brownish, inamyloid walls up to 1 μm thick, smooth or with helical thickenings and pigment incrustations, occasionally with short, obtuse branchlets or scattered, broad diverticula in hyphae near the pileus edge; sometimes with scattered or clustered, suberect to erect, cylindric to clavate terminal hyphal cells especially on the disc, accounting for the granular-crystalline appearance when viewed with a hand lens. *Pileus trama and lamellar trama* interwoven, composed of weakly gelatinized hyphae 2.4–10.8 μm broad with hyaline, ochraceous or pale rusty brown, inamyloid walls up to 1 μm thick, smooth or pigment-incrusted, with numerous interhyphal spaces. *Stipe tramal hyphae* parallel, 3–7.8 μm broad with hyaline to pale brown, inamyloid walls up to 0.6 μm thick. *Stipe cortical hyphae* parallel, 2.4–5.4 μm broad with ochraceous to brown, inamyloid walls up to 0.6 μm thick, often with granular or patchy pigment incrustations. *Clamp connections* present.

HABIT, HABITAT, AND DISTRIBUTION: Densely gregarious, insititious on the scale bark of *Arbutus menziesii*. Uncommon but locally abundant, often growing in zones which completely encircle the tree base. Nov.–Feb.

MATERIAL EXAMINED: U.S.A., CALIFORNIA, Del Norte Co.: D. E. Desjardin 979. Marin Co.: D. E. Desjardin 931, 939, 1839 (HOLOTYPE: Samuel P. Taylor State Park, Lagunitas, 27 Nov. 1982), 3143,

3209, 3256, H. D. Thiers 7330, 7410, 8536, A. H. Smith 9097 (MICH). Mendocino Co.: D. E. Desjardin 3174. Yuba Co.: D. E. Desjardin 2643, 3234, 3245. All SFSU except where noted otherwise.

Micromphale arbuticola best fits in section *Micromphale* because of the presence of non-gelatinized and weakly diverticulate epicuticular hyphae, weakly gelatinized tramal hyphae and the absence of rhizomorphs. Features that distinguish this taxon include a dark brown, rugulose-sulcate pileus that is typically less than 1 cm broad, a short, dark brown, minutely pruinose, insititious stipe, and a strong alliaceous odor. Additionally, *M. arbuticola* is restricted to the scale bark of *Arbutus menziesii*, a substrate unique for the genus. It is similar to *M. foetidum*, but differs in size, coloration, stipe ornamentation, spore length and substrate. *Micromphale foetidum* has a reddish brown pileus that is consistently larger (1.5–3 cm broad) and a paler, subinsititious stipe that is typically pubescent to velutinous. In addition, *M. foetidum* has strongly gelatinized tramal hyphae and longer spores, 8.5–10 μm long as compared to 7.2–8.1 μm for *M. arbuticola*. *Micromphale foetidum*, commonly collected in eastern North America on bark of members of the Betulaceae and Fagaceae, is apparently not known from California.

Marasmius applanatipes Desjardin, sp. nov.

FIGS. 8–12

Pileus 10–18 mm latus, e convexo planus, laevis vel ruguloso-striatus, glaber, subhygrophanus, primo atrobadius, in aetate disco atrobrunneus, margine griseolo-aurantius. Odor et sapor alliacei. Lamellae adnatae, subdistantes vel distantes, latae, griseolo-aurantiae. Stipes 30–40 mm longus, 1.5–3 mm crassus, teres vel compressus et fissus, aequalis, velutinus vel tomentosus, non insititius, apice bubalinus, base badius; rhizomorphae nullae. Sporae 8.7–10.2 \times 4.8–6 μm , ellipsoideae vel amygdaliformes, laevae, inamyloideae, in cumulo albae. Cheilocystidia dispersa, versiformia, 33–48 \times 6–9 μm , clavata vel bifida, laeva vel nodulis lateralibus praedita. Caulocystidia fasciculata, 42–78 \times 5.4–9 μm , cylindrica vel strangulata, laeves. Epicutis pilei paliformis, ex cellulis laevis, clavatis composita. Pilei dense gregarii inter folia exuta arborum coniferarum. Holotypus: D. E. Desjardin 2330, Yuba Pass, Hwy 49, Sierra Co., Calif., 8 Oct. 1983. (SFSU). Isotypus: (TUR)

Pileus 10–18 mm broad, when young convex, in age becoming broadly convex to plane, rarely with a shallow central depression; margin incurved when young, entire, even, smooth to minutely rugulose-striate, in age becoming decurved to uplifted, entire to eroded, rugulose-striate to short sulcate; surface opaque, dry, dull, glabrous, subhygrophanous; dark reddish brown (8F4-8) overall when young, in age disc becoming dark brown (7F4-8), brown (7E4-6) or light brown (7D5-7), margin fading to brownish grey (6C3), greyish orange (5-6B2-4) or pinkish buff. Context up to 1 mm thick, soft, brown to brownish grey. *Odor and taste* strongly alliaceous. *Lamellae* adnate to adnexed, often attached to a partial or complete collar of tissue that remains attached to apex of stipe, subdistant to distant, medium broad to broad (1–2.5 mm), rarely anastomosing and intervenose; at first buff or orange white (5A2) to greyish orange (5-6B3), darkening in age, often becoming brown (7E4-5); edges even, entire, wavy in age, paler than the sides when dried. Lamellulae in 1–2 series. *Stipe* 30–40 mm long, 1.5–3(–4) mm broad, when young terete and equal, in age becoming compressed and often cleft, typically tapered downward, hollow, cartilaginous, context concolorous with stipe surface; apex pubescent, central portion velutinous, base subtomentose to tomentose with tomentum adhering to substrate; non-insititious; when young, apex buff to orange white (5A2), central portion brownish grey (6C3), base brown (6-7E5-7) to reddish brown (8E4-8), in age apex brownish orange (5C4), central portion light brown (7D4-5), brown (6-7E4-7) or reddish brown (8E4-7), base dark brown (7B4-8) to dark reddish brown (8F4-8). *Rhizomorphs* and sterile stipes absent. *Basidiocarps* pliant, marcescent, reviving.

Spores 8.7–10.2(–12) \times 4.8–6(–6.6) μm , broadly ellipsoid to amygdaliform,

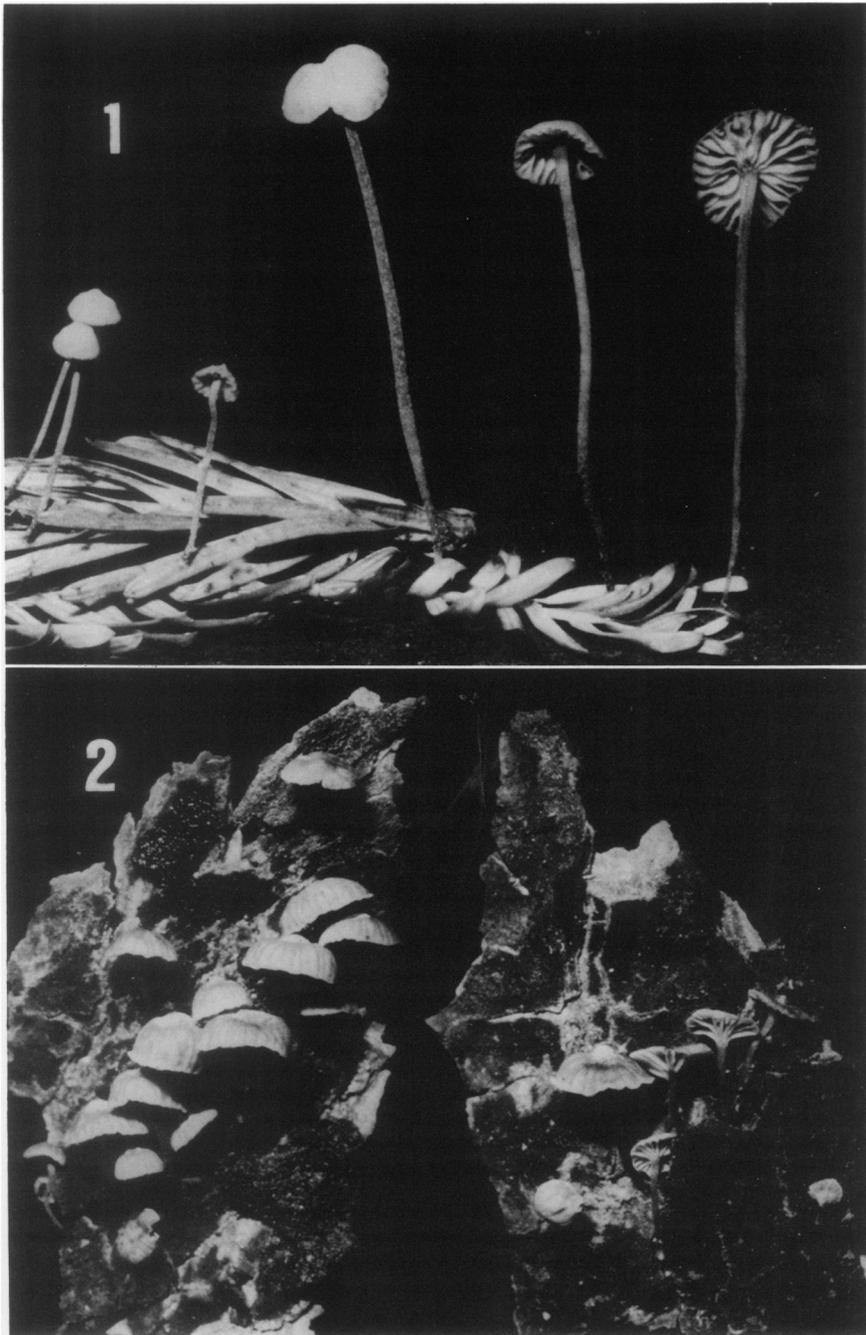
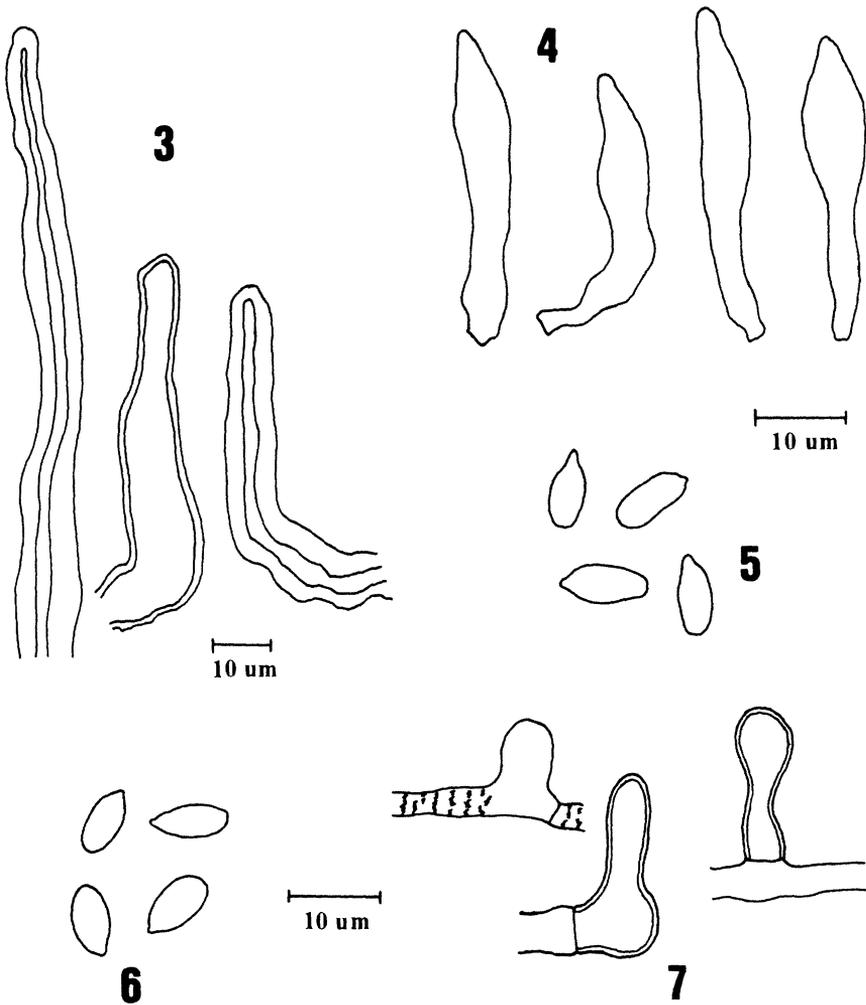


FIG. 1. *Micromphale sequoiae* (DED 2526), $\times 1.5$. FIG. 2. *Micromphale arbuticola* (DED 2643), $\times 1.5$.

overall with a slightly darker disc. Context light brown to brownish orange, soft, up to 1 mm thick. *Odor* mild or rarely slightly fetid when old and wet. *Taste* strongly alliaceous after 1–2 minutes. *Lamellae* adnate, free in age or rarely attached to a partial collar, close to subdistant, narrow to medium broad (up to 1



FIGS. 3–5. *Micromphale sequoiae* (DED 1740). 3. Caulocystidia (stipe hairs) from base of stipe. 4. Hymenial cystidia. 5. Basidiospores. FIGS. 6, 7. *Micromphale arbuticola* (DED 1839). 6. Basidiospores. 7. Caulocystidia.

mm), rarely anastomosing or intervenose; at first pale greyish orange (6B2), fading in age to pale orange white (5-6A2), typically concolorous with the pileus margin at maturity; edges even, entire, concolorous. Lamellulae in 1–2 series. Stipe 20–43 mm long, 0.75–1.5 mm broad, terete or rarely apically compressed and cleft, equal or tapered downward, hollow, cartilaginous, insititious, context concolorous with stipe surface; apex pruinose, pubescent below and often with a furfuraceous base; when young, apical portion pale greyish orange (6B2), central portion light brown (7D4-6), base dark brown (7F5-7), in age apex becoming pale brownish orange (7C3), central portion becoming brown (7E4-5), base becoming dark brown (7-8F4-8), or occasionally dark brown overall in age. *Rhizomorphs* short, thin, black, poorly developed, scattered; sterile stipes rare. *Basidiocarps* pliant, marcescent, reviving.

Spores 6.5–7.5 × 3–3.7 µm, ellipsoid to lacrymoid, hyaline, smooth, inamyloid, white in deposit. *Basidia* 25–29 × 6–7.2 µm, clavate, hyaline, two-spored and four-spored, with sterigmata up to 4.8 µm long. *Cheilocystidia* common, 27–